October 29, 1963

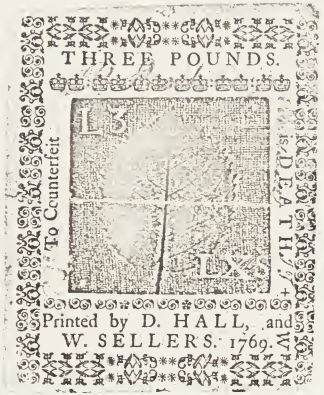
Dear Dr. Miller,

Enclosed are the Xerox copies of the illustrations to make your reading more intelligible.

Sincerely

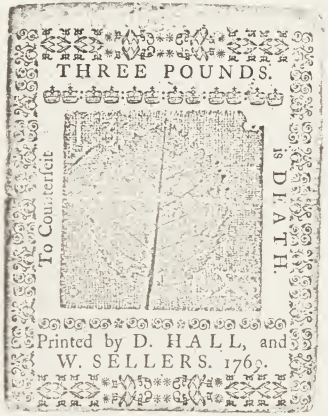
Eric P. Newman

From the desk of
ERIC P. NEWMAN


THREE POUNDS.
To Counterfeit
is DEATH.
Printed by D. HALL, and
W. SELLERS. 1769.

† Ten Shillings. †
Printed by HALL and
SELLERS. 1776.

FIVE POUNDS
Printed by B. Franklin, and
D. Hall. 1760.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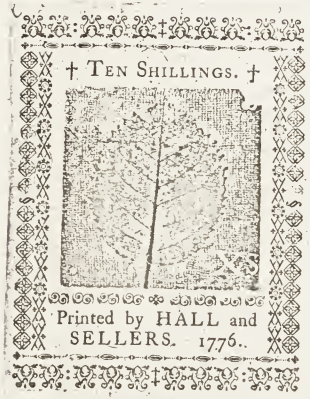
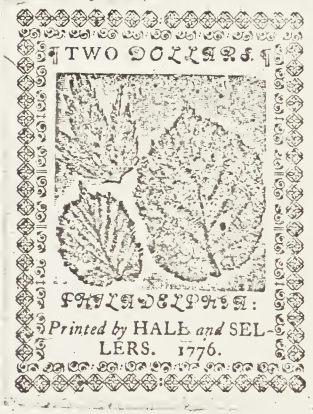

† Ten Shillings. †
Printed by HALL and
SELLERS. 1776.


TWO DOLLARS.
Printed by HALL and SEL-
LERS. 1776.

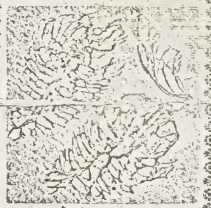
FIVE SHILLINGS.

To Counterfeit, is Death.

Printed by B. FRANKLIN, and D. HALL.

TEN SHILLINGS.

To Counterfeit is Death.



Printed by B. Franklin, and D. Hall.

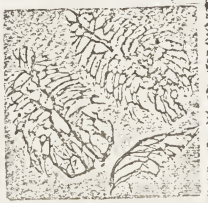
FIVE DOLLARS.

Printed by HALL and SELLERS. 1776.

THREE DOLLARS.

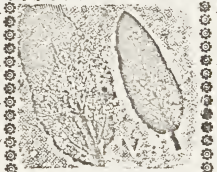
Philadelphia: Printed by Hall & Sellers. 1776.

FOUR DOLLARS

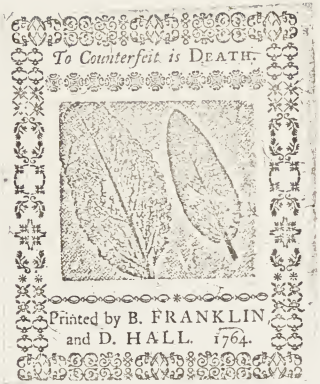


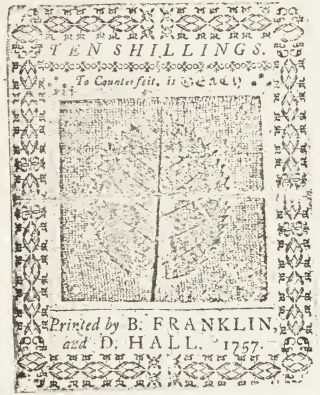
Printed by Hall & Sellers, in Philadelphia. 1775.

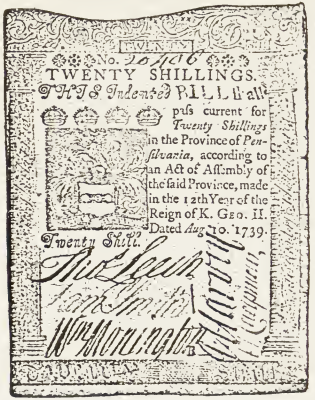
FIVE DOLLARS.

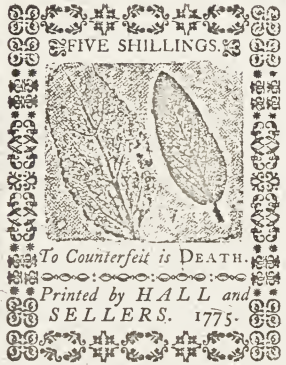


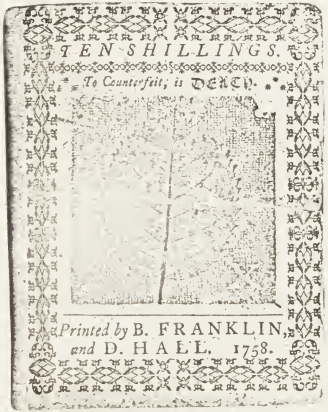
Printed by HALL and SELLERS. 1777.


To Counterfeit is DEATH.
Printed by B. FRANKLIN and D. HALL. 1764.


TEN SHILLINGS.
To Counterfeit, is DEATH.
Printed by B. FRANKLIN, and D. HALL. 1757.


No. 26,926
TWENTY SHILLINGS.
THIS Indented BILL shall
pass current for Twenty Shillings in the Province of Pensilvania, according to an Act of Assembly of the said Province, made in the 12th Year of the Reign of K. Geo. II. Dated Aug. 10. 1739.
Twenty Shill.


FIVE SHILLINGS.
To Counterfeit is DEATH.
Printed by HALL and SELLERS. 1775.


TEN SHILLINGS.
To Counterfeit, is DEATH.
Printed by B. FRANKLIN, and D. HALL. 1758.

TWENTY SHILL
To Counterfeit, is DEATH
Printed by B. Franklin.

TWENTY SHILL.

To Counterfeit is Death.

Printed by B. FRANKLIN, and D. HALL. 1757.

EIGHTEEN PENCE.

To Counterfeit, is DEATH.

Printed by B. FRANKLIN, and D. HALL.

To Counterfeit is DEATH.

Printed by DAVID HALL, and WILLIAM SELLERS. 1772.

§ TWENTY SHILLINGS. §

PRINTED BY HALL AND SELLERS. 1775.

FORTY SHILLINGS.

PRINTED BY HALL AND SELLERS. 1775.

To Counterfeit is DEATH.

Printed by *D. HALL*, and *W. SELLERS*. 1772.

THREE Shillings.

To counterfeit is Death.
WOODBRIDGE.
Printed by *James Parker.*

TEN SHILLINGS.

Printed by B. FRANKLIN, and D. HALL.

To Counterfeit is DEATH.

TWENTY SHILLINGS.

Printed by B. FRANKLIN, and D. HALL.

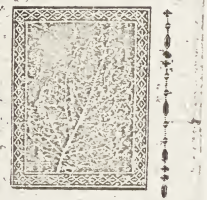
To Counterfeit is DEATH.

To Counterfeit is DEATH.

Printed by B. FRANKLIN, and D. HALL. 1759.

Two Pounds Ten Shillings

THIRTY SHILLINGS.



BURLINGTON,
in NEW-JERSEY,
Printed by Isaac Collins, 1776.

EIGHT DOLLARS.

PRINTED BY HALL & SELLERS. 1775.

Two Shillings & Six-pence.
Printed by B. FRANKLIN, and
D. HALL.

'Tis DEATH to Counterfeit. PRINTED BY JONAS GREEN.
ONE DOLLAR. Equal to 4 s. 6 d. Sterling.

SIX POUNDS.
ONE HUNDRED AND TWENTY FOUR DOLLARS.
Printed by DAVID HALL and WILLIAM SELLERS.
To COUNTERFEIT is DEATH

THIRTY SHILLINGS.
Printed by HALL and
SELLERS. 1775.

THE UNITED STATES promise to pay the Bearer
Bills of Exchange for the above annuity, of
demanded, according to a Resolution of CON-
GRESS, of the 18th of March, 1780.
Printed by HALL and SELLERS

WASHINGTON UNIVERSITY

ST. LOUIS, MISSOURI 63130

DEPARTMENT OF CHEMISTRY

Eric -

Thought you'd enjoy reading about this new application of nature printing

Warmest regards

Peter

TISSUE PRINTING RE-EMERGES IN PLANT STUDY

Joseph E. Varner, Charles Rebstock Professor of Biology, has developed a variation of a technique first discussed in an almost-forgotten scientific journal article 30 years ago that will provide molecular biologists rapid, novel insights into the structures of plant cells and tissues. The technique can reveal detailed images of plant cells and tissues more quickly, cheaply, and efficiently than traditional methods.

Tissue printing involves pressing a freshly cut section of plant onto nitrocellulose paper to reveal in seconds a print of its tissues, detailed to within two-millionths of a meter. To obtain a chemical impression of the sample's proteins, sugars, and nucleic acids, Varner uses nylon paper. The resolution in many cases yields information to the nearest cell. Varner estimates that tissue printing nets at least 90 percent of the information that can be derived from traditional microscopic techniques.

"We're reinventing the wheel," Varner says. "To get a physical print, there's no staining, no messing around; you press it, and that's all there is to it. One of the nicest things about it is that it provides instant gratification. In seconds, you see something and what you see is a serious representation of anatomy."

Professor Joseph Varner makes a tissue print.

The traditional method, by comparison, involves dehydrating the sample for several hours in alcohol, imbedding it in paraffin, cutting thin sections with a microtome, washing away the paraffin, staining the sample, and then analyzing the sample. This method takes several days and many hours of labor.

"After you've done all this, you might find you've got the wrong materials, and you've wasted a lot of time," Varner says. "Certainly the chemistry you have is far removed from that which was going on in the plant at the time you collected it. One of the distinct advantages of tissue printing is the chance to observe the chemistry that is going on the instant the sample is sectioned and printed."

Varner's method should prove useful to a wide range of people, from scientists to school children. It will allow molecular biologists using genetic engineering to monitor processes inside plant cells and tissues. Field botanists can use the method to take numerous prints of a plant without removing the plant from the soil. It will be helpful to science teachers and their students because it will let them see results almost instantaneously.

"The technique won't solve everyone's problems, but it will help a lot of people," Varner observes. "I've taken this to seventh graders to let them see the vascular system of soybean plants, and they really enjoy it because they see things right away. I think it's better for a school child to learn a simple lesson well than to get involved in something very complex.

"Of course, some people resist this sort of technology because they want to think of science as imposing, a bit out of reach of the average. But I believe half of the fun of science is being aware of how things get done. The rest of the fun comes from seeing and doing science."

Varner's discovery began in 1987 when he became discouraged by the amount of work necessary to localize proteins in plant sections. It was at this time he remembered R. Daoust's paper published 30 years earlier. He asked an assistant to pick up on Daoust's technique by doing some prints with nitrocellulose paper one afternoon; the first results were available the next morning. "We were amazed at how fast the process went," Varner recalls. "It's astonishing so few people have tried to work with Daoust's methods."

Varner explained his technique to an international audience of plant biologists in Cognac, France, last August. He has published several papers on the technique; the most recent is "New Ways to Look at the Architecture of Plant Cell Walls," appearing in *Plant Physiology* 91, 1989. He and his colleagues now are preparing a laboratory manual of tissue printing techniques to be published by Academic Press. ■

VIR DEN: The illustrations for Newman's article present special problem.

Nos. 2 and 24. Normal cuts & cutlines separately made. ← 13 picas

Nos. 8, 14, 23 and 25. " " " " ← 17 "

No. 1. Split in half for two facing pages, reducing enough for 3-line cutlines.. Cutlines separately made.

All other nos. are to have cuts made of actual sizes of ~~xxxxx~~ notes (varying in width from 17 to 18 picas) with cutlines placed vertically along side cut. Is this best accomplished by making combination plates of ~~xxx~~ 27 x 45 picas or by making regular plates about 18 picas wide by 45 picas high and setting cutlines in separates about 9 picas wide ~~xxxx~~ by whatever height they reach? Cutlines should be set in 8 century bold, leaded about 2 points. I'll leave the choice to you. I hope I've made it clear. (I have not retyped these cutlines, which may be found along side of each plate)

UNDER SEPARATE COVER

Brad

~~xxxx~~ text

Please send a/galley to Eric Newman, Edison Bros. Stores, 400 Washington St., St. Louis 2, Mo. when you mail mine.